

## Gravitational Physics and Astronomy 2022



### Online Conference on Gravitational Physics and Astronomy

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<https://indico.cern.ch/e/GPA2022>



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## The Bose Hubbard Hamiltonian Reproduces Blackhole Dynamics on a Quantum Computer

It is possible to simulate scalar fields' dynamics on quantum computers by the Bose-Hubbard Hamiltonian. On the other hand, scalar fields are equally ubiquitous in modern cosmology. In particular many properties of Blackholes can be modelled by scalar fields and blackholes are thought to be quantum objects. Especially with regards to information processing. Thus motivated, we attempt to reproduce blackhole dynamics on currently available quantum computers. We hope that this will introduce a new way to investigate blackholes and other cosmological phenomena experimentally.

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